

## CLAIMS

1. An apparatus for identifying a liquid type of a gasoline, comprising:

5 a gasoline liquid type identifying chamber for causing an identified gasoline introduced into a liquid type identifying apparatus body to stay temporarily;

a liquid type identifying sensor heater provided in the gasoline liquid type identifying chamber; and

10 a liquid temperature sensor provided in the gasoline liquid type identifying chamber apart from the liquid type identifying sensor heater at a constant interval;

the liquid type identifying sensor heater including a heater and an identifying liquid temperature sensor provided in the vicinity of the heater, and

15 the apparatus further comprising an identification control portion;

the identification control portion being constructed that a pulse voltage is applied to the liquid type identifying sensor heater for a predetermined time, and the identified gasoline staying temporarily in the gasoline liquid type identifying chamber is heated by the heater and the liquid type is identified with a voltage output difference  $V_0$  corresponding to a temperature difference between an initial temperature and a peak temperature

in the identifying liquid temperature sensor.

2. The apparatus for identifying a liquid type of a gasoline according to claim 1, wherein the voltage output difference V0  
5 is equal to a voltage difference between an average initial voltage V1 obtained by sampling an initial voltage before application of the pulse voltage at a predetermined number of times and an average peak voltage V2 obtained by sampling a peak voltage after the application of the pulse voltage at a predetermined number  
10 of times, that is,

$$V0 = V2 - V1.$$

3. The apparatus for identifying a liquid type of a gasoline according to claim 1 or 2, wherein the identification control  
15 portion identifies a type of a gasoline with the voltage output difference V0 obtained for the identified gasoline, which is based on calibration curve data to be a correlation of a voltage output difference with a temperature for a predetermined reference gasoline prestored in the identification control portion.

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4. The apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 3, wherein the identification control portion correlates a liquid type voltage output Vout for the voltage output difference V0 at a measuring temperature of

the identified gasoline with an output voltage for a voltage output difference at a measuring temperature for a predetermined threshold reference gasoline and thus carries out a correction.

- 5 5. The apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 3, wherein the liquid type identifying sensor heater is a laminated liquid type identifying sensor heater in which a heater and an identifying liquid temperature sensor are laminated through an insulating layer.

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6. The apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 5, wherein the heater and the identifying liquid temperature sensor in the liquid type identifying sensor heater are constituted to come in contact with  
15 the identified gasoline through a metallic fin, respectively.

7. The apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 6, wherein the liquid temperature sensor is constituted to come in contact with the identified  
20 gasoline through the metallic fin.

8. A method for identifying a liquid type of a gasoline, comprising the steps of:

applying a pulse voltage for a predetermined time to a liquid

type identifying sensor heater including a heater and an identifying liquid temperature sensor provided in the vicinity of the heater;

heating an identified gasoline by the heater; and

5 identifying the liquid type with a voltage output difference  $V_0$  corresponding to a temperature difference between an initial temperature and a peak temperature in the identifying liquid temperature sensor.

10 9. The method for identifying a liquid type of a gasoline according to claim 8, wherein the voltage output difference  $V_0$  is equal to a voltage difference between an average initial voltage  $V_1$  obtained by sampling an initial voltage before application of the pulse voltage at a predetermined number of times and an  
15 average peak voltage  $V_2$  obtained by sampling a peak voltage after the application of the pulse voltage at a predetermined number of times, that is,

$$V_0 = V_2 - V_1.$$

20 10. The method for identifying a liquid type of a gasoline according to claim 8 or 9, wherein a type of a gasoline is identified with the voltage output difference  $V_0$  obtained for the identified gasoline, based on calibration curve data to be a correlation of a voltage output difference with a temperature for a

predetermined reference gasoline which is prestored.

11. The method for identifying a liquid type of a gasoline according to any of claims 8 to 10, wherein a liquid type voltage output  $V_{out}$  for the voltage output difference  $V_0$  at a measuring temperature of the identified gasoline is correlated with an output voltage for a voltage output difference at a measuring temperature for a predetermined threshold reference gasoline and is thus corrected.

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12. The method for identifying a liquid type of a gasoline according to any of claims 8 to 11, wherein the liquid type identifying sensor heater is a laminated liquid type identifying sensor heater in which a heater and an identifying liquid temperature sensor are laminated through an insulating layer.

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13. The method for identifying a liquid type of a gasoline according to any of claims 8 to 12, wherein the heater and the identifying liquid temperature sensor in the liquid type identifying sensor heater are constituted to come in contact with the identified gasoline through a metallic fin, respectively.

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14. The method for identifying a liquid type of a gasoline according to any of claims 8 to 13, wherein the liquid temperature

sensor is constituted to come in contact with the identified gasoline through the metallic fin.

15. An apparatus for identifying a liquid type of a gasoline  
5 of a car, comprising:

the apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 7 which is provided in a gasoline tank or on an upstream side or a downstream side of a gasoline pump.

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16. A method for identifying a liquid type of a gasoline of a car, comprising the step of:

identifying a type of a gasoline in a gasoline tank or on an upstream side or a downstream side of a gasoline pump by using  
15 the method for identifying a liquid type of a gasoline according to any of claims 8 to 14.

17. An apparatus for reducing an exhaust gas of a car, comprising:

20 the apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 7 which is provided in a gasoline tank or on an upstream side or a downstream side of a gasoline pump; and

an ignition timing control device for regulating an ignition

timing based on a type of the gasoline which is identified by the apparatus for identifying a liquid type of a gasoline.

18. A method for reducing an exhaust gas of a car, comprising

5 the steps of:

identifying a type of a gasoline in a gasoline tank or on an upstream side or a downstream side of a gasoline pump by using the method for identifying a liquid type of a gasoline according to any of claims 8 to 14, and

10 regulating an ignition timing based on the type of the gasoline which is identified by the apparatus for identifying a liquid type of a gasoline.

19. An apparatus for reducing an exhaust gas of a car,

15 comprising:

the apparatus for identifying a liquid type of a gasoline according to any of claims 1 to 7 which is provided in a gasoline tank or on an upstream side or a downstream side of a gasoline pump; and

20 a gasoline compression control device for regulating a compressibility of the gasoline based on a type of the gasoline which is identified by the apparatus for identifying a liquid type of a gasoline.

20. A method for reducing an exhaust gas of a car, comprising the steps of:

identifying a type of a gasoline in a gasoline tank or on an upstream side or a downstream side of a gasoline pump by using  
5 the method for identifying a liquid type of a gasoline according to any of claims 8 to 14, and  
regulating a compressibility of the gasoline based on the type of the gasoline which is identified by the apparatus for  
identifying a liquid type of a gasoline.